

## **ABSTRACT**

**The invention presents a new warm control rolling method, in consideration of processing heat generation, as a method of stably manufacturing ultrafine crystal steel of 3 microns to 1 micron or less, without any limitation in pass interval or strain speed, being a rolling method of manufacturing steel mainly composed of fine ferrite particle texture with average ferrite grain size of 3  $\mu\text{m}$  or less, in which, in the rolling process of one pass or more wherein the rolling temperature range is a temperature region of 350°C to 800°C, the material temperature upon start of rolling of each rolling process does not exceed the maximum temperature of 800°C, and the material temperature during rolling and right after final rolling (within 1 second) is not lower than 350°C, temperature  $T_{x\text{-out}}$  right after rolling in each rolling process (within 1 second) is not higher than the temperature that is higher than rolling entry temperature  $T_{x\text{-in}}$  by 100°C and the material temperature right after rolling (within 1 second) is not lower than the temperature that is lower than the temperature right before rolling by 100°C.**